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JUNCUS TRIGLUMIS: FIG. 1, habit, × 1, from the Tyrol; FIG. 2, fruiting glomerule, × 3, from western Siberia; FIG. 3, seeds, × 12, from Switzerland.

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THE NEW ENGLAND BOTANICAL CLUB

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A NEW LUDVIGIA FROM NEW ENGLAND[1]

EDWIN H. EAMES

OUR common *Ludvigia palustris* (L.) Ell. is apparently so familiar and variable as to merit little consideration in the field. A plant of similar habit but with small oblanceolate leaves and hypanthia tapering to base on very short peduncles, was collected by me on the shore of West Pond, Guilford, Connecticut in 1928 and again in 1930; also a submerged form of peculiar characteristics.

In 1932 a good series was collected in several localities near the coast, extending its range eastward about 60 miles—almost to Narragansett Bay—which indicates probable reward for a search in southeastern Massachusetts.

With plenty of this material Mr. C. A. Weatherby, at the Gray Herbarium, readily placed these plants in the section of which the rare or local *Ludwigiantha brevipes* Long has been considered the northern representative, separated by floral characters from *L. arcuata* (Walt.) Small which has a range along the coast from "Va. to Fla."

The name *brevipes*, however, appropriate originally, for peduncles 5–12 mm. long, loses force now compared with the more northern stabilized endemic of the Coastal Plain, or adjacent foot-hills region, of southern New England, with peduncles 1–2 mm. long and other characters correlated or definite.

Associates at West Pond include *Ludvigia sphaerocarpa* Ell., once and long known as the only station in Connecticut, *Xyris Smalliana*

[1] Published with aid of a grant to RHODORA from the National Academy of Sciences.

Nash, *Juncus militaris* Bigel. and others of coastal plain affinities in this region.

Long's species seems to me more appropriate as

Ludvigia **brevipes** (Long), n. comb. (*Ludwigiantha brevipes* Long in Britt. and Br. Ill. Fl. ed. 2, ii: 586 (1913)):—Creeping, glabrous or rarely minutely recurved-puberulent on some upper parts and adjoining ovaries, branched, 1–3 dm. long; leaves many, opposite, oblong-oblanceolate, acutish (actually rounded at very apex), tapering basally to a narrow-margined short indeterminate petiole or sessile, 1–2.5 cm. long; *flowers* solitary in the axils, 12–13 mm. broad, on more or less slender erect to spreading peduncles 5–12 mm. long; in anthesis the hypanthium turbinate, 4-angled, 4–6 mm. long, about equalling the sepals, distinctly bibracteolate at base; sepals 4–6 mm. long, ovate-lanceolate to lanceolate, acute, spreading, persistent; petals yellow, fugacious, broad-elliptic, 4–6 mm. long, equalling sepals; stamens 1.5–2.5 mm. long (anthers .75 mm. long), falling early intact; style stouter, 1–2 mm. long, not persistent, surrounded by a 4-lobed stylopodium: capsule clavate, 8–10 mm. long, distinctly exceeding the spreading calyx, upcurved in its tapering lower third.—"Moist sand, Long Beach Island, Ocean County, N. J.," about 150 miles from the Connecticut coast.

Ludvigia **lacustris**, sp. nov., *L. brevipedi* similis, a qua differt floribus 5.5–6.5 mm. latis, pedunculis 1–2 (–2.5) mm. longis, hypanthio 2–3 mm. longo, sepalis ovatis deinde ovato-lanceolatis acutis ovarium aequantibus vel eo brevioribus 2.5–3 mm. longis 1.8–2.2 mm. latis, petalis elliptico-oblongis 1.3–2 (–3) mm. longis quam sepala brevioribus; staminibus 1.4–1.8 mm. longis (antheris .60 mm. longis), stylis 1.1–1.5 mm. longis, capsulis immaturis clavatis rectis vel vix curvatis.

Similar, differing in the *flowers* 5.5–6.5 mm. broad; peduncles 1–2 (–2.5) mm. long; hypanthium 2–3 mm. long; sepals ovate, soon ovate-lanceolate, acute, shorter than or equalling ovary, 2.5–3.0 x 1.8–2.2 mm.; petals elliptic-oblong, 1.3–2 (–3) mm. long, much shorter than sepals; stamens 1.4–1.8 mm. long (anthers .60 mm. long); styles 1.1–1.5 mm. long; capsules clavate, straight or nearly so (but not seen at full maturity).—Wet or moist open shores and in shallow water. Connecticut; New Haven County; Guilford, several collections at West Pond; New London County; Old Lyme, mill-pond at Laysville, shores of stream below dam at Rogers Lake, south end of Rogers Lake in sand and in crevices of retaining wall; Lyme, north end of Rogers Lake in 1–2.5 dm. water, more robust, green, much branched basally, stems ascending with tips emersed 1–1.5 dm. and flowering freely. Rhode Island: Washington County; Charlestown, in moist pure sand on long-emersed beach at Watchaug Pond, 12 Sept. 1932, Eames no. 11,498 (type in Herb. Gray).

The type, like most other individuals of similar habitat, has purplish leaves but is unusual in their profusion, even imbricate with recurved

petioles, the main branches all basal and frequently curved laterally, the internodes very short, 2–6 mm. next to the flowers. The most robust plants, from Lyme, were particularly favored by warm water and a heavy stratum of decaying vegetation over sand. In these the internodes were up to 10 or finally even 18 mm. long, the flowers wide open in and mostly facing bright sunshine. After flowering the sepals and ovary grow a little longer and, unless fertilized (which is rarely, or late), become yellow, contract and drop off with sepals expanded. The very short peduncles sometimes upcurve 90° to bring the flowers of prostrate plants square to the zenith.

A form of deep water was a surprise from the first, is markedly different in habit, texture and appearance and is here named

Ludvigia lacustris forma **aquatilis** f. nov., submersa, erecta, simplex vel valde ramosa, 4–10 dm. alta; foliis multis membranaceis lineari-lanceolatis sessilibus subacutis 15–35 (–45) mm. longis, 2.5–6 mm. latis.

Submersed, erect, simple to much branched, 4–10 dm. tall; internodes short; leaves many, membranous, linear-lanceolate, sessile, acutish, 15–35 (–45) x 2.5–6 mm. Connecticut: New Haven County; N. Branford, in Little West Pond; Guilford, West Pond, Eames no. 11,475 (type in Herb. Gray): New London County; Old Lyme, in a millpond at Laysville and in Rogers Lake. Rhode Island: Washington County, cast up on shore of Worden's Pond, South Kingston. Usually in deep water—sometimes 2.5 m.—sterile, sometimes in profusion as if from widely creeping rootstocks, or solitary and simple or nearly so. Easily broken in rough water and sometimes washed ashore in quantities.

Allied in habit to the preceding form is a plant long known to me in my home range, now named

Ludvigia palustris (L.) Ell., f. **submersa** (Glück), n. comb. *Isnardia palustris*, f. *submersa* Glück, Syst. & Morph. Untersuchungen über Wasser und Sumpfgewächse, iii. 155 (1911). Submersed, erect or ascending, simple to much branching, 3–8 dm. tall; leaves membranous, broad-ovate, distinctly petioled, obtuse. Widely distributed in range of type. A plant from a mill-pond in Old Lyme, where locally plentiful, no. 11,507, Eames, may be cited as representative.

Usually in deep water, sterile. The coarse branched form with its larger leaves 4–5 cm. long, including petiole and to 2 cm. broad, the tapered base often more abrupt than apex. The simple or little-branched very slender form appears to be singularly solitary as a rule, in ponds with a weedy bottom and shooting far above most

other submersed plants, has much smaller pale green leaves is rather rare but occurs at all altitudes in eastern New York, Connecticut and in Winchester (Wincheck) Pond, Hopkinton, Rhode Island.

Bridgeport, Connecticut.

RECENT DISCOVERIES IN THE NEWFOUNDLAND FLORA

M. L. Fernald

(*Continued from page 223*)

C. stylosa C. A. Meyer. Additional stations from Highlands of St. John: peat on quartzite slopes, head of Deep Gulch, Doctor Hill, *Fernald, Long & Fogg*, no. 1441. Bonne Bay: peaty or turfy upper quartzite slopes (alt. 600–650 m.), Killdevil, no. 1442.

*C. salina Wahlenb., var. pseudofilipendula Kükenth. Bonne Bay: alluvial islands and shores at mouth of Main River, *Fernald, Long & Fogg*, no. 1449.

In Rhodora, xxviii. 166 (1926), I recorded this variety from Newfoundland on the strength of a collection which closely matches Scandinavian material of Kükenthal's hybrid of it with *C. aquatilis*. The Main River material seems to be the pure variety.

C. crinita Lam. Typical *C. crinita* is not common in Newfoundland. The northernmost station on the West Coast is on Bay of Islands: mossy spruce woods and thickets, Lark Harbor, *Fernald, Long & Fogg*, no. 144.

C. lasiocarpa Ehrh. The northernmost known Newfoundland station is on St. John Bay: wet bog back of Eddy's (or Old Man's) Cove, *Fernald, Long & Fogg*, no. 1452.

C. Hostiana DC., var. laurentiana Fern. & Wieg., Rhodora, xxvi. 122 (1924). The most extensive development of the variety yet known is on Bonne Bay: dominant on gravelly shore and alluvial islands near mouth of Main River, *Fernald, Long & Fogg*, no. 1454. Accompanied by an abundant hybrid:

*× C. **xanthina**, hybr. nov. (*C. flava* × *C. Hostiana* var. *laurentiana*). × *C. xanthocarpae* Degl. (*C. flava* × *Hostiana*) similis, omnibus partibus majoribus; culmis 7–8 dm. altis supra scabris; foliis 3–4 mm. latis; spicis femineis 1.2–2 cm. longis 7–10 mm. crasiis, imis 3–11 cm. distantibus; periginiis ovatis inflatis 4–5 mm. longis longe rostratis, valde costatis.—Newfoundland: several large clumps with the abundant parents on gravelly shores and alluvial islands near mouth of Main River, Bonne Bay, August 27, 1929, *Fernald, Long & Fogg*, no. 1455 (type in Gray Herb.).

× *C. xanthina* clearly combines the characters of its parents and is quite sterile. It strongly simulates × *C. xanthocarpa* (× *C. fulva*

Hoppe, not Good.) of Europe, a frequent hybrid there between *C. flava* and typical *C. Hostiana*. Another hybrid of *C. Hostiana*, var. *laurentiana*, abundant at the type-locality is

* × C. **pseudo-fulva**, hybr. nov. (*C. Hostiana*, var. *laurentiana* × *lepidocarpa*). × *C. xanthinae* similis; culmis apice leviusculis; spicis femineis imis 1–6 cm. distantibus.—NEWFOUNDLAND: abundant with the parents, wet runs and boggy spots in limestone barrens, upper slopes and tablelands, alt. 200–300 m., Table Mt., Port au Port Bay, August 16, 1910, *Fernald, Wiegand & Kittredge*, no. 4258 (TYPE in Gray Herb.)

Very similar to × *C. Leutzii* Kneucker (*C. Hostiana* × *lepidocarpa*), a frequent European hybrid, but larger in all parts.

* × C. PIEPERIANA P. Junge (*C. flava* × *lepidocarpa*). With the parents at peaty margin of spring-rill in spruce swamp, Brig Bay, *Fernald, Long & Dunbar*, no. 26,434.

* × C. **subviridula** (Kükenth.), comb. nov. *C. flava* × *Oederi*, forma *subviridula* Kükenth. in Engler, Pflanzenr. IV[20]. 678 (1909). *C. flava* × *Oederi*, var. *pumila* (*Oederi*, var. *viridula*). One of the commoner hybrids of Newfoundland. VALLEY OF THE EXPLOITS: ledges and talus, Grand Falls, *Fernald, Wiegand, Bartram & Darlington*, no. 4987; sandy shore, Buchan Junction, July 9, 1930, *K. P. Jansson*. ST. JOHN BAY: pools back of beach, Bard Harbor, *Wiegand, Gilbert & Hotchkiss*, no. 27,744. BONNE BAY: swales on alluvial islands and shores at mouth of Main River, *Fernald, Long & Fogg*, no. 1464.

C. CRYPTOLEPIS Mackenz. Common in southern and central Newfoundland, its northern limits seem to be on BAY OF ISLANDS: peaty and gravelly thickets, French (or Tweed) Island, *Fernald, Long & Fogg*, no. 149; and on NOTRE DAME BAY: gravelly pond-shores, Lewisport, *Fernald, Wiegand & Darlington*, no. 4982.

C. OEDERI Retz., var. PUMILA (Coss. & Germ.) Fern., RHODORA, viii. 201 (1906). *C. viridula* Michx. Fl. Bor.-Am. ii. 170 (1803). *C. flava*, var. *pumila* Coss. & Germ. Fl. Par. 602 (1845). *C. flava*, var. *viridula* (Michx.) Bailey, Mem. Torr. Bot. Cl. i. 31 (1889). *C. Oederi*, var. *viridula* (Michx.) Kükenth. in Engler, Pflanzenr. iv. 20 (1909).

Kükenthal does not cite, even in synonymy, either *C. flava* var. *pumila* Coss. & Germ or *C. Oederi*, var. *pumila;* and he treats *C. Oederi*, var. *viridula* as strictly North American and eastern Asiatic. Nevertheless, I still find myself as unable as I was in 1906 to see wherein the small states of *C. viridula* Michx. differ from authentic material of Cosson & Germain's *C. flava*, var. *pumila*. The account by Cosson & Germain was clear:

var. γ. *pumila*. (C. OEderi. Ehrh. calam. n. 79.—Host, Gram. I. t. 65.)—Tiges de 5–15 centimètr. Epis femelles, sessiles, rapprochés-

agglomérés. Utricules très petits, terminés par un bec court droit.—*A. C.* Marais desséchés, bords des mares et des étangs, surtout des terrains sablonneux.—Bords de la Seine! St-Léger! Senart! Fontainebleau!, etc.

Although Cosson & Germain cited as a synonym *C. Oederi* of Ehrhart and of Host, their variety rests primarily upon the plant described from the "Environs de Paris." An authentic specimen in the Gray Herbarium collected by Cosson near Paris, "In paludosis pr. St. Hubert (Seine et Oise)," seems to me quite inseparable from the American *C. viridula* Michx.

C. MICROGLOCHIN Wahlenb. A slight extension southward to INGORNACHOIX BAY: peaty and marly borders of shallow ponds in limestone barrens, Old Port au Choix and Pointe Riche, *Fernald, Long & Fogg*, nos. 1465, 1466.

C. VESICARIA L., var. JEJUNA Fern. A considerable northern extension to HIGHLANDS OF ST. JOHN: dry meadow on tableland of Doctor Hill, *Fernald, Long & Fogg*, no. 1473.

CAREX VESICARIA L., var. **laurentiana**, n. var. (TAB. 248, FIGS. 11 and 12), var. *monilem* simulans; spicis foemineis cylindricis 1–3.5 cm. longis 7–12 mm. crassis; squamis ovato-lanceolatis attenuatis plus minusve purpureo-castaneis 5–7 mm. longis perigyniis subaequantibus; spicis masculis 1 vel 2.—Western Newfoundland, Saguenay County and Magdalen Islands, Quebec and southern New Brunswick. NEWFOUNDLAND: dry meadow on tableland of Doctor Hill, Highlands of St. John, July 31, 1929, *Fernald, Long & Fogg*, no. 1474 (TYPE in Gray Herb.). QUEBEC: swale, St. Paul, Chevalier, Saguenay Co., July 26, 1915, *St. John*, no. 90,279; grassy shore, Romaine, Lagorgendière, Saguenay Co., August 31, 1915, *St. John*, no. 90,225; platières de sable, Rivière Mingan, Saguenay Co., 26 juillet, 1926, *Victorin & Rolland*, no. 24,511. MAGDALEN ISLANDS: lieux humides, Ile du Bassin, 15 juillet, 1919, *Victorin & Rolland*, no. 9230. NEW BRUNSWICK: Grand Manan Island, 1861, *J. T. Rothrock*.

In the type-collection of *C. vesicaria*, var. *laurentiana* the culms are only 2–3.5 dm. high, but in specimens from lower altitudes they may reach a height of 8 dm. In its very long and broad usually dark-purple scales var. *laurentiana* is conspicuously different from typical *C. vesicaria* and its described varieties, in which the scales, although sometimes dark, are conspicuously shorter than the perigynia. The variety is apparently local, or perhaps of more northern range than we yet know. Its occurrence on the high tableland of Doctor Hill in Newfoundland and its range westward on the southern margin of the Labrador Peninsula, as well as its stations on the Magdalen Islands and upon bleak Grand Manan (in the mouth of the Bay of Fundy)

suggest that at these stations it is possibly reaching southern limits from a broader northern range.

The occurrence on Grand Manan or on the headlands about the Bay of Fundy or on the outer coast of Maine of plants characteristic of the bleaker regions of the Gulf of St. Lawrence but elsewhere rare or wanting in the Maritime Provinces is well known: *Draba stylaris* J. Gay, *Saxifraga Aizoon* Jacq., *Potentilla pectinata* Raf., *Loiseleuria procumbens* (L.) Desv., *Primula laurentiana* Fernald, *Senecio Pseudo-Arnica* Less. and at least 20 other species. It is, therefore, of special interest that *Carex vesicaria*, var. *laurentiana* should have been found on Grand Manan.

Juncus Gerardi Loisel. Extended north to Bonne Bay: brackish tidal mud-flats at mouth of Main River, *Fernald, Long & Fogg*, no. 1480.

J. Dudleyi Wiegand. In Newfoundland known only near the West Coast. Bonne Bay: alluvial islands and shores at mouth of Main River, *Fernald, Long & Fogg*, no. 1482. Bay of Islands: marsh near mouth of Hugh's Brook, *Fernald & Wiegand*, no. 2988; wet clay slopes above the beach, Governor Island, *Fernald, Long & Fogg*, no. 164.

J. effusus L., var. compactus Lej. & Court. Extended north to Bonne Bay: open upland marsh, Bonne Bay, *Harlow Bishop*, no. 184; serpentine mud and gravel by Winterhouse Brook, *Fernald, Long & Fogg*, no. 1483.

J. effusus, var. conglomeratus (L.) Engelm. *J. conglomeratus* L. See Fernald & Wiegand, Rhodora, xii. 85 (1910). Heretofore known in Newfoundland only from the eastern and southeastern districts, but now found on Bay of Islands: dominant on sphagnous marsh, Lark Harbor, *Fernald, Long & Fogg*, no. 167.

Juncus canadensis J. Gay, var. sparsiflorus Fernald, Rhodora, xxiii. 241 (1921). All the Newfoundland material of *Juncus canadensis* belongs to var. *sparsiflorus*, the Nova Scotian variety with large flowers. In Newfoundland, the mature perianth ranges from 3.8–4.6 mm. long, rather longer than in Nova Scotia. The variety is common in wet peat in southern Newfoundland. Its most northern stations, as shown by our collections, are in the valley of the Exploits and about Bonne Bay.

J. nodosus L. Extended north to Bonne Bay: wet limy peat bordering pond, Storehouse Cove, *Fernald, Long & Fogg*, no. 1489; gravel along Deer Brook, no. 1490.

J. alpinus Vill. and var. rariflorus Hartm.

As noted on p. 84, I find myself unable to follow the extreme segregations of *Juncus alpinus* recently proposed in Europe. My friend, Mr. H. W. Pugsley, describes as a new species *J. Marshallii* Pugsley,

Journ. Bot. 282, with fig. (1931), from Ross-shire in Scotland and from Flower Cove, Newfoundland (*Fernald*, no. 27,780). To me 27,780 is merely an undeveloped state of the common Newfoundland plant, *J. alpinus*, var. *rariflorus* Hartm. (var. *insignis* Fries). In this, the original identification, Dr. Lindquist coincides, saying in his important study, *Taxonomical remarks on Juncus alpinus Villars and some related species*,[1] where he reduces the Ross-shire plant to varietal rank, *J. alpinus*, var. *Marshallii* (Pugsley) Lindquist, "It may be remarked that I cannot accept the specimen no. 27780 collected in Newfoundland by Fernald and referred to by Pugsley as belonging to this type."[2]

The Newfoundland material of *Juncus alpinus* falls into two well-defined, though confluent, extremes: true *J. alpinus* with the flowers all sessile or nearly sessile in dense heads, and var. *rariflorus* (= var. *insignis*) with some of them elevated above the others on elongate pedicels. The latter has often been treated as a species, *J. nodulosus* Wahlenb., but so many transitions occur that I have been unable to view the two as specifically separable. It is, therefore, gratifying to find Lindquist, likewise, treating it as a variety. Both *J. alpinus* (typical) and *J. alpinus*, var. *rariflorus* vary greatly in size and number of heads, and very dwarf colonies or selected individuals (with only 1 or 2 heads) may be artificially separated off. They are, however, at best minor forms. Var. *rariflorus* may be either dark- or light-colored. The important bibliography is given by Lindquist, though he seems to err in citing var. *rariflorus* as of "(E. Fries) C. J. Hartman." The name *rariflorus* started as *J. rariflorus* Hartm. (1820), becoming *J. nodulosus* β. *rariflorus* (Hartm.) Fries in 1828 and *J. alpinus* β. *rariflorus* Hartman—or (Hartm.) Hartm. if wished—in 1849.

Dr. T. A. Sprague, Journ. Bot. lxvi. 210 (1928), urges the taking up of *Juncus alpino-articulatus* Chaix, a name published in the general introductory matter in the 1st volume (1786) of Villars' *Histoire des Plantes de Dauphiné*, but rejected by Villars himself in the main body of his flora, Hist. ii. 233 (1787), where *J. alpinus* was published. Lindquist, however, believes, since *J. alpino-articulatus* rested only on a pre-Linnean diagnosis by Haller, which might just as well have been based on a quite different species from *J. alpinus* Vill., that it is wholly unwise to discard the definite *J. alpinus* for the wholly indefin-

[1] Lindquist, Botaniska Notiser (1932), 313–372 (1932).
[2] Lindquist, l. c. 342 (1932).

ite *J. alpino-articulatus*. Stability of nomenclature and avoidance of error are best maintained by holding to *J. alpinus*.

The other argument against taking up the name *J. alpino-articulatus* is the very practical one, certainly intended by the provision of the International Rules, that a name should be excluded when it is "a permanent source of confusion or error." Sprague argues that the ill-begotten *J. alpino-articulatus* would not be such a source of trouble:

> It has been suggested to the writer that the name *Juncus alpino-articulatus* Chaix should be rejected under Art. 51, 4°, on the ground that it might be mistaken for a hybrid between *Juncus alpinus* and *J. articulatus* by those who were unfamiliar with the details of its publication. This suggestion appears to be unfounded: as soon as *J. alpinus* is treated as a synonym of *J. alpino-articulatus* in the principal Floras, such confusion—if it ever arose—would disappear. Hence the name *Juncus alpino-articulatus* cannot be a *permanent* cause of confusion or error, and should be adopted under International Rules.

Surely, if it be urged that *Juncus alpino-articulatus* should be maintained, in spite of *J. articulatus* L. (1753), then, similarly, *Asplenium Trichomanes-ramosum* L. (1753) must be maintained (see foot-note on p. 47) over the perfectly clear and universally used *A. viride* Hudson (1762). Botanical nomenclature at best is difficult: let us keep it clear where we can. Clarity demands the use of *Juncus alpinus* and of *Asplenium viride*.

* × J. **alpiniformis**, hybr. nov. *J. alpinus* × *articulatus* (*J. lampocarpus* Ehrh.). *J. alpino* similis; petalis attenuatis; seminibus abortivis.—Newfoundland: abundant, with typical and fertile *J. alpinus* Vill. and *J. articulatus* L. in wet limy peat, bordering pond, Storehouse Cove, Bonne Bay, August 9, 1929, *Fernald, Long & Fogg*, no. 1501 (type in Gray Herb.).

Strongly resembling typical *J. alpinus*, but with the narrow and attenuate petals of *J. articulatus*. Abundant but all sterile. As stated, in discussions under abundant hybrids of *Carex*, it is far more convenient to have a properly published binomial for hybrids of some abundance than to have to designate, at each reference to them, the long hybrid formula. In the present instance, the existence of the confusing name *J. alpino-articulatus* Chaix (discussed above) makes it doubly desirable that the hybrid *J. alpinus* × *articulatus* should have a distinctive name; otherwise we should have confusion worse confounded!

* × J. **nodosiformis**, nom. nov. *J. alpinus* × *nodosus* Buchenau in Engler, Pflanzenr. iv ^{36}. 216 (1906). Bonne Bay: very abundant and sterile, with the two fertile parents, wet limy peat bordering Store-

house Cove, *Fernald, Long & Fogg*, no. 1491. BAY OF ISLANDS: wet place, Birchy Cove (Curling), *Waghorne*, no. 56.

Quite like the type of Buchenau's hybrid, from Gaspé Co., Quebec; strongly simulating typical *J. alpinus* but more slender and with the very slender and freely creeping rhizome of *J. nodosus;* the sterile heads smaller and more numerous than in *J. nodosus* of the region. × *J. nodosiformis* is superficially very similar to the European *J. anceps* Laharpe, but it can hardly be referred to that species.

*J. ARTICULATUS L., var. OBTUSATUS Engelm. BONNE BAY: alluvial islands and shores at mouth of Main River, *Fernald, Long & Fogg*, nos. 1499, 1500.

* × J. **fulvescens**, nom. nov. *J. articulatus* × *brevicaudatus* Fern. & Wieg., RHODORA, xii. 137 (1910). In southern Newfoundland, Nova Scotia and southeastern Maine very abundant, often forming extensive areas of thousands of sterile plants combining the characters of the two fertile parents. In some of these areas the infertile hybrid is far more abundant than the fertile parents, indicating that a classification which places *J. articulatus* and *J. brevicaudatus* in different sections (20 sections apart in Buchenau's treatment) is at least artificial. The following are the collections at hand of × *J. fulvescens*. NEWFOUNDLAND: springy swales among spruce thickets, Bay Bulls, *Fernald, Long & Dunbar*, no. 26,491; Murray's Pond, near St. John's, 1928, *A. M. Ayre;* springy ditch, Grand Falls, *Fernald, Wiegand & Darlington*, no. 5127; wet thickets along river, Grand Falls, no. 5128; boggy pond-margins back of Birchy Cove (Curling), *Fernald, Wiegand & Kittredge*, no. 3012; springy spots, Birchy Cove (Curling), no. 3014; ditch in gravelly thickets along Harry's River, *Fernald & Wiegand*, no. 3013. PRINCE EDWARD ISLAND: shallow pools and small ponds, Tignish, *Fernald, Long & St. John*, no. 7182. NOVA SCOTIA: Louisburg, *J. Macoun*, no. 20,720; brackish gravelly shore of Lahave River, Bridgewater, *Fernald & Long*, no. 23,619; wet savannahs along Little River, east of Tiddville, *Fernald & Long*, no. 20,690; wet peaty swale, Yarmouth, *Fernald & Graves*, no. 20,688; boggy swale, Yarmouth, *Fernald, Long & Linder*, no. 20,692. MAINE: wet mossy spot on Charlotte Road, Pembroke, *Fernald (& Wiegand)*, no. 1588 (TYPE in Gray Herb.).

J. ALBESCENS (Lange) Fern. RHODORA, xxvi. 202 (1925). Apparently general on the West Coast, wherever the limestone barrens or limy talus prevail.

Since *Juncus albescens* has only recently been segregated from the Eurasian *J. triglumis* L. and since it has not been wholly accepted by European botanists[1] who have not been familiar with it, it is desirable to illustrate the two species side-by-side (PLATE 249).

[1] For instance, my friend, the late Dr. Ostenfeld, who enumerates for Greenland only *J. triglumis.—The Flora of Greenl. and its Origin*, Kgl. Danske Videnskab. Selskab. Biol. Meddel. vi. no. 3: 68 (1926)

Luzula campestris (L.) DC., var. acadiensis Fern., Rhodora, xix. 38 (1917). Already reported by Mrs. Kennedy (Rhodora, xxxiii. 207). Besides her stations the following may be recorded. Avalon Peninsula: woods near Murray's Pond, 1931, *A. M. Ayre*. Valley of the Exploits: damp thickets and open woods, Grand Falls, *Fernald, Wiegand, Bartram & Darlington*, nos. 5155, 5157. St.-Pierre et Miquelon: lieux humides ou secs, bois, plaines, Cap à l'Aigle, St.-Pierre, *Arsène*, no. 159.

*L. campestris, var. alpina Gaud. *L. sudetica* (Willd.) DC. Bonne Bay: shelves and talus of diorite cliffs, Western Head, *Fernald, Long & Fogg*, no. 1512.

An arctic and subarctic variety (or species) otherwise known south of northern Labrador only on subalpine meadows of the Shickshock Mts., Gaspé.

Streptopus oreopolus Fern. Add to the records from Highlands of St. John: peaty quartzite slopes, Deep Gulch, Doctor Hill, *Fernald, Long & Fogg*, no. 1525.

Trillium cernuum L. Range extended north to Bonne Bay: alluvial woods and thickets near mouth of Main River, *Fernald & Long*, no. 1527.

Cypripedium parviflorum Salisb., var. planipetalum Fern. Rhodora, xxviii. 168 (1926).

Since the very characteristic western Newfoundland extreme has not been illustrated it is desirable to show characteristic specimens (plate 250). I am unable to treat the plant as a species, *C. planipetalum* (Fern.) F. Morris in Morris & Eames, Our Wild Orchids, 8, 11 (1929), a treatment only inadvertently (apparently) subscribed to by Mr. Morris, who, in discussing the plant, calls it a variety.

C. acaule Ait. The northern limit in Newfoundland is apparently on Bonne Bay: turfy and bushy patches on quartzite slope of Killdevil, *Fernald, Long & Fogg*, no. 1536.

Habenaria straminea Fern. Rhodora, xxviii. 175 (1926). Extended south to St. John Bay and Ingornachoix Bay: peaty turf on limestone barrens northeast of Old Port au Choix, *Fernald, Long & Fogg*, no. 1541; turfy limestone barrens back of Crow's Head, no. 1542; turfy and peaty knolls bordering limestone barrens, Eastern Point, no. 1544; heathy carpets of *Cladonia, Empetrum*, etc., at upper borders of depressions in limestone barrens, Pointe Riche, no. 1543.

Mr. Frank Morris doubts the specific distinctness of *Habenaria straminea*, treating it as *H. albida*, var. *straminea* (Fern.) F. Morris in

Morris & Eames, Our Wild Orchids, 69, plates 23 and 24 (1929).[1] This is, of course, a matter of judgment; but if *H. dilatata* (Pursh) Hook. is kept apart from *H. hyperborea* (L.) R. Br., *H. straminea,* with as strong morphological characters and with a very distinct range, is surely a good species. If *H. straminea,* occurring wholly outside the range of *H. albida* (European), is only a variety, what possible basis is there for maintaining as species *H. macrophylla* Goldie, *H. blephariglottis* (Willd.) Hook. and *H. fimbriata* (Ait.) R. Br., species without strong morphological characters and all occurring, in a broad sense, in essentially the same ranges as their paired but earlier-published species, *H. orbiculata* (Pursh) Torr., *H. ciliaris* (L.) R. Br. and *H. psycodes* (L.) Spreng., respectively? The most conservative students, however, such as Ames (Orchidaceae, fasc. iv. and Enum. Orchids U. S. and Can.), maintain *H. dilatata, macrophylla, blephariglottis* and *fimbriata* as species.

The differences originally pointed out are maintained in the new material of *H. straminea* as well as in a series just received from Greenland: the generally greater size and thicker spike; usually longer bracts; narrower and thinner stramineous sepals, with more evident nerves; longer, thinner and definitely nerved petals; longer and thinner, clearly nerved lip; and usually longer spur. Mr. Morris's photographs well bring out the habitat: pl. 23 with *Salix vestita* Pursh and *Empetrum nigrum* L. dominant, pl. 24 with *Myrica Gale* L. dominant and *Rubus acaulis* Michx. and *Sanguisorba canadensis* apparent; but details of the flowers have not heretofore been shown. Dr. Raup and I have, therefore, photographed dried flowers (just as removed from the herbarium-specimens) of both *H. straminea* and the European *H. albida* (PLATE 251).

Habenaria straminea is certainly the Greenland and Newfoundland representative of the European *H. albida.* Whether it is a species or a strongly marked geographic variety is of minor importance as compared with the greater significance of the geographic relationship. As already stated, if it be treated merely as a variety, that status should also be given *H. dilatata;* while *H. macrophylla* and *H. fimbriata*

[1] The authorship of the combination is here ascribed to Morris since, in the preface to the book, specific reference is made to the fact that "the Eames plan of a camera record was wedded to the Morris practice of an author's pen," from which it has been inferred (in the Gray Herb. Card Index and elsewhere) that Morris was responsible for the text. This interpretation is supported by a letter from Mr. Morris, under date of January 7, 1930, with the statement: "The responsibility for the whole letter-press, as between Mr. Eames and me, is mine and undivided."

should be treated as forms (differing in size only) and *H. blephariglottis* as hardly more than a color-form. Personally I am not now prepared to follow such a course, any more than I am to merge *Habenaria* with *Orchis* or to split it into monotypic or ditypic genera!

Habenaria Hookeri Torr., var. **abbreviata**, n. var. (tab. 252), omnibus partibus quam apud formam typicam brevior; foliis oblongo-obovatis vel suborbicularibus 2.5–7 cm. longis; scapis 7–18 cm. altis; spicis 2.5–9 cm. longis; sepalo dorsali late ovato obtuso apice vix prolongato 5–7 mm. longo, sepalis lateralibus divergentibus 6–8.5 mm. longis; petalis erectis 5–7 mm. longis; labello 6–10 mm. longo deltoideo-lanceolato apice plerumque rotundato vix prolongato; calcare 9–13 mm. longo; capsulis 9–14 cm. longis.—Northwestern Newfoundland, on limestone barrens bordering St. John Bay and Ingornachoix Bay: with *Empetrum nigrum*, *Vaccinium uliginosum* var. *alpinum*, etc. in peaty turf on limestone barrens, Old Port au Choix, July 21, 1929, *Fernald, Long & Fogg*, no. 1549; with *Empetrum nigrum* and *Juniperus communis* var. *montana* on peaty knolls in limestone barrens, Old Port au Choix, July 22, 1929, *Fernald, Long & Fogg*, no. 1550; with *Empetrum nigrum*, *Juniperus communis* var. *montana*, etc. on dry peaty knolls in limestone barrens back of Crow's Head, St. John Bay, July 23, 1929, *Fernald, Long & Fogg*, no. 1551; peaty knolls on limestone barrens, Pointe Riche, July 24, 1929, *Fernald, Long & Fogg*, no. 1552; turfy and peaty knolls bordering limestone barrens, Eastern Point, St. John Bay, July 25, 1929, *Fernald, Long & Fogg*, no. 1553 (type in Gray Herb.).

Habenaria Hookeri var. *abbreviata* (plate 252, habit and upper insert) differs from typical continental American *H. Hookeri* (lower insert) in its shorter dimensions in every part, in the yellower color of its flowers, in the blunter upper sepal which shows only a slight tendency to the prolonged tip so often seen in the continental plant, and in the more gradually narrowed lip. Its habitat, with arctic-alpine xerophytes on limestone gravel, is so unlike the conventional habitat, in acid woodland humus on the continent, that one would at first feel impelled to consider it a distinct species. It exhibits, however, no definite morphological characters by which it can be specifically separated, although it is as clearly segregated from *H. Hookeri* as is *H. macrophylla* from *H. orbiculata*, so-called species without marked geographic segregation.

As stated, the plant of the limestone barrens of northwestern Newfoundland differs from typical *Habenaria Hookeri* by its smaller size in all parts. These contrasts are brought out in the photographs made by Dr. Raup; and measurements taken from the 64 individuals

of var. *abbreviata* collected and from the 157 individuals of typical *H. Hookeri*, as represented in the Gray Herbarium and the herbarium of the New England Botanical Club (ranging from southeastern New Brunswick to central Maine and Montreal and west to southern Ontario, Michigan and Pennsylvania), give the following contrasts.

H. Hookeri (typical): leaves 5–16 cm. long; scape (including spike) 1.7–4.5 dm. high; spike 5–25 cm. long; upper sepal 7–11 mm. long; lateral sepals 8.5–11.5 mm. long; petals 6–9 mm. long; lip 9–13 mm. long; spur 1.4–2.6 cm. long; capsules 1.5–2.2 cm. long.

Var. abbreviata: leaves 2.5–9 cm. long; scape 0.7–1.8 dm. high; spike 2.5–9 cm. long; upper sepal 5–7 mm. long; lateral sepals 6–8.5 mm. long; petals 5–7 mm. long; lip 6–10 mm. long; spur 0.9–1.3 cm. long; capsules 0.9–1.4 cm. long.

Although the Newfoundland plant is rather sharply differentiated from typical *Habenaria Hookeri* in the size of all its parts, there is a transitional series at the extreme northeastern limit of the species on the continent. All the material I have seen from Aroostook County, Maine and from the region just to the north in Temiscouata, Rimouski, Charlevoix and extreme western Saguenay Counties, Quebec has the short spur and lip of var. *abbreviata*, but in size of sepals and leaves and in stature it is as large as in typical *H. Hookeri*, the spurs being 9–14 mm. long, the upper sepal 7–9 mm. long, the lip 7.5–10 mm. long, but the leaves 6–12 cm. long, the spikes 0.6–2.2 dm. long; and occasional specimens from northern Vermont and northern New York indicate a similar transition. The only material at hand from the Magdalen Islands is overripe and with a very short fruiting spike; but it has lost the distinctive parts of the flowers.

H. orbiculata (Pursh) Torr. Frequent on the West Coast, occasional southward across the Island, as often in open as in wooded habitats (see pp. 8, 87 and map 9). The northernmost station is on Bonne Bay: in turf of *Scirpus cespitosus* var. *callosus* and in sphagnum, wet peaty bog-barrens at 400–550 m. alt., Lookout Mt., *Fernald, Long & Fogg*, no. 1554.

The western Newfoundland plants, like those from the Shickshock Mts. in Gaspé are very small, as compared with the large woodland plants of New England and the upland to North Carolina—leaves 4–9 cm. broad, scapes 1.5–2.5 dm. high, with racemes only 5–12 cm. long. I am unable to find any tangible character to separate this extreme series from the larger Alleghenian plant and particularly from the plants of western North America. In Newfoundland we, as yet, know *H. macrophylla* Goldie only from the extreme southeast, the Avalon Peninsula.

H. LACERA (Michx.) R. Br., var. TERRAE-NOVAE Fern. RHODORA, xxviii. 21 (1926). Range extended north to BONNE BAY: tableland of Lookout Mt.

H. PSYCODES (L.) Spreng. The northern limit seems to be on BONNE BAY: extremely abundant, dominant, occurring in many thousands of individuals on meadows and peats both at sea-level and on the tablelands.

The combination *Habenaria psycodes* was first made in Spreng. Syst. iii. 693 (1826) and, nomenclaturally, the combination rests upon *Orchis psycodes* L. (1753); therefore, the combination should be referred to (L.) Spreng., even though Sprengel was confused as to the exact application of the name.

POGONIA OPHIOGLOSSOIDES (L.) Ker. The northern limit in western Newfoundland seems to be on BONNE BAY: wet peaty barrens at about 395 m., Lookout Mt., *Fernald, Long & Fogg*, no. 1556.

CALOPOGON PULCHELLUS (Sw.) R. Br. The northern limit in western Newfoundland is apparently on BONNE BAY: very rare on wet peaty barrens at about 365 m., Lookout Mt., *Fernald, Long & Fogg*, no. 1557.

Calopogon pulchellus is certainly not as common in western Newfoundland as *Pogonia ophioglossoides* and *Arethusa bulbosa*. It is, judging from collections made by others, apparently commoner in the eastern half of the Island, especially about Notre Dame Bay. Of the five collections in the Gray Herbarium from western Newfoundland, four were particularly noted by their collectors as rare: Lookout Mt., Bonne Bay, "very rare"; Lark Harbor, Bay of Islands (*Fernald, Long & Fogg*, no. 201), "very rare"; Blomidon (*Mackenzie & Griscom*, no. 10,226), "scarce"; Port aux Basques (*Fernald, Long & Dunbar*, no. 26,542), "very scarce."

LISTERA BOREALIS Morong. ST. JOHN BAY: pastured spruce woods and thickets, Eddy's (Old Man's) Cove, *Fernald, Long & Fogg*, no. 1560.

A characteristic individual of this species, well known from Anticosti and the Mingan Islands, was found by Long in an area close to shore (the habitat on Anticosti and the Mingans), where, most unfortunately, the cattle had wrought almost complete destruction. Search in the region, extending along the coast for several miles, failed to bring to light another specimen. See pp. 60, 61.

MALAXIS BRACHYPODA (Gray) Fern. RHODORA, xxviii. 176 (1926). Apparently more abundant in western Newfoundland than in most areas on the continent, often in colonies of hundreds (sometimes thousands) of plants.

This species is so sharply distinguished from the Eurasian *Malaxis monophyllos* (L.) Sw. that, now that its characters have been pointed out, it is surprising to see it united again with the Eurasian (and Alaskan) plant, as *M. monophyllos*, var. *brachypoda* (Gray) F. Morris in Morris & Eames, Our Wild Orchids, 358, plates 110 and 111 (1929). The more important diagnostic points, as already summarized, are:

M. MONOPHYLLOS. Flower-bud just before expanding ovate-lanceolate, 2–3 mm. long: pedicel and ovary during anthesis 2.5–4 mm. long: expanded perianth 4–6.5 mm. broad: flower resupinate, the lip and lateral sepals subconnivent and projected forward: capsules 5–7 mm. long, on twisted pedicels 3–5 mm. long, crowned by the subconnivent ascending perianth-segments.

M. BRACHYPODA. Flower-bud just before expanding ovate, 1.5–2 mm. long: pedicel and ovary during anthesis 1.5–3 mm. long: expanded perianth 3–5 mm. broad: perianth-segments (including lip) strongly divergent, perpendicular to the axis of the ovary, finally reflexed and appressed to the ovary, the lip drooping: capsules 3–5 mm. long, on straight pedicels 1–2 mm. long, crowned by the reflexed and appressed perianth-segments.

Since the clear differences have not been wholly appreciated (the plants being insignificant), it seems desirable to make them clear by photography. In PLATE 253 enlarged details of the two are displayed side-by-side.

These differences, with complete geographic isolation, certainly are specific. I am not familiar with the Old World *Malaxis monophyllos* growing nor sufficiently conversant with folk-lore as to know whether the English name used by Morris, "White Adder's Mouth," applies to the European plant. As a pseudonym for our plant with greenish-yellow flowers it is not descriptive.

SALIX LUCIDA Muhl., var. INTONSA Fern. Extending north to BONNE BAY: gravelly shores and alluvial islands near mouth of Main River, *Fernald & Long*, no. 1577.

*S. UVA-URSI Pursh, forma **phyllolepis**, f. nov., bracteis (squamis) amentorum foliaceis; ovariis abortivis. PORT AU PORT BAY: dry limestone barrens, upper slopes and tablelands, alt. 200–300 m., Table Mt., August 16, 1910, *Fernald, Wiegand & Kittredge*, no. 3171 (TYPE in Gray Herb.).

S. HERBACEA L. Additional stations from the HIGHLANDS OF ST. JOHN: mossy shelves of quartzite cliffs at head of Yellow Brook, Doctor Hill, and shelves of cliffs at head of Deep Gulch, Doctor Hill, *Fernald, Long & Fogg*, nos. 1588, 1589.

S. CORDIFOLIA Pursh, var. CALLICARPAEA (Trautv.) Fern. RHODORA, xxviii. 184 (1926). Extended south to BONNE BAY: large shrubs, up to 2 dm. high, damp thicket under limestone crest (alt. 650 m.), Killdevil, *Fernald, Long & Fogg*, no. 1597.

S. CORDATA Muhl. Extended north to BONNE BAY: gravelly shores and alluvial islands near mouth of Main River, *Fernald & Long*, no. 1594.

S. PEDUNCULATA Fern. RHODORA, XXVIII. 188 (1926). Extended south from the Straits of Belle Isle to POINTE RICHE: damp open depressions in limestone barrens, *Fernald, Long & Fogg,* no. 1595, heavily fruiting shrubs with decumbent branches, and aments up to 1 dm. long; no. 1596, same habitat, shrubs sterile (presumably staminate), more ascending, up to 1 m. high.

S. GLAUCOPHYLLOIDES Fern. The northern limit is apparently on BONNE BAY: gravelly shores and alluvial islands near mouth of Main River, *R. H. Kimball,* no. 15; *Fernald & Long,* nos. 1598, 1599.

SALIX (§ CHRYSANTHEAE) **Wiegandii,** n. sp. (TAB. 254), frutex depressus vel adscendens 1–3 dm. altus *S. lanatam* simulans; ramis ramulisque decumbentibus vel adscendentibus crassis castaneis deinde cinereis juvenilibus cano-tomentosis; gemmis bene evolutis ovoideis apice rotundatis 5–6 mm. longis cano-tomentosis; foliis ovalibus vel oblongis deinde 1.5–4.5 cm. longis 0.4–2.8 cm. latis rigido-coreaceis utrinque sparse floccoso-lanatis integris margine revolutis venis subtus prominentibus scrobiculato-reticulatis, petiolis crassis lanatis 3–8 mm. longis; stipulis oblique cordato-ovatis coriaceis plerumque glanduloso-serratis subtus reticulatis 0.2–1.2 cm. longis; amentis femineis breviter pedunculatis pedunculo foliis 3–4 munito 2.7–6 cm. longis 1–1.5 cm. crassis densifloris, pedunculo rhachique villosis vel villoso-tomentosis; bracteis (squamis) obovatis obtusis atris 2–2.5 mm. longis pilis cinereis vel sordidis crispato-villosis; capsulis lanceolato-conicis 6–7 mm. longis sparse villoso-tomentosis vel glabratis subsessilibus, stylo elongato tenui 2 mm. longo, stigmatibus integris 0.5–0.7 mm. longis; glandula bractea breviora; amentis masculis 1–1.5 cm. longis; filamentis glabris.—Western NEWFOUNDLAND, in the region bordering St. John Bay and Ingornachoix Bay: damp rocky limestone barrens, near sea-level, Ingornachoix Bay, August 4, 1910, *Fernald, Wiegand & Kittredge,* no. 3185 (mature foliage and buds); trailing on turfy talus of limestone headland, Gargamelle Cove, Ingornachoix Bay, July 20, 1929, *Fernald, Long & Fogg,* no. 1602—flowering pistillate shrubs (TYPE in Gray Herb.); turfy and peaty margins of dry gravelly limestone barrens, Old Port au Choix, St. John Bay, July 22, 1929, *Fernald, Long & Fogg,* nos. 1603 (fruiting) and 1604 (with shriveled staminate ament showing glabrous filaments); damp open depressions in limestone barrens, Pointe Riche, July 24, 1929, *Fernald, Long & Fogg,* no. 1605 (fruiting).

Although the original sterile material of *Salix Wiegandii* was labelled as collected by *Fernald, Wiegand and Kittredge,* it was actually found by Prof. Wiegand and Mr. Kittredge, since I was at that date on the Labrador coast (our specimens of 1910 and 1911 being "pooled," we followed the practice, now found to be unfortunately misleading, of using a joint label for all collections whether jointly or individually made). *S. Wiegandii,* now secured in both flower and fruit, proves to

be a most distinct species with which it is a keen pleasure to associate the name of its discoverer.

Salix Wiegandii is a most interesting new member of § *Chrysantheae* Koch (§ *Lanatae* Koehne) not closely related to any known member of that boreal group. It occurs in the same region as *S. calcicola* Fern. & Wieg. and like that species has very short staminate aments (the staminate aments of *S. calcicola*, heretofore undescribed but now known through 7 collections, being 1.5–2.5 cm. long) and pistillate aments of about the same size as in *S. calcicola;* but in most characters the two are thoroughly distinct. The young branchlets of *S. calcicola* are villous, of *S. Wiegandii* lanate; the leaves of *S. calcicola* glabrous or quickly glabrate, in expanding sometimes loosely villous, and of a broad-ovate to suborbicular outline, the leaves of *S. Wiegandii* permanently lanate upon both surfaces and of an oval to oblong or slightly obovate outline; the large stipules of the vigorous shoots in *S. calcicola* taper subequally to base, those of *S. Wiegandii* are conspicuously inequalateral at the cordate base; the sessile aments of *S. calcicola* are from terminal or subterminal blackish and villous buds of the preceding year, the short peduncled and leafy-bracted aments of *S. Wiegandii* from axillary pale-brown and lanate buds; the capsules of *S. calcicola* are glabrous from the first, of *S. Wiegandii* mostly pubescent (at least at base) to maturity.

From the other American members of § *Chrysantheae, Salix Wiegandii* is at once distinguished. The only other member of the section known in eastern America is *S. laurentiana* Fernald, a small tree or tall shrub with the large leaves (up to 2 dm. long) crenate and on petioles mostly 1–2 cm. long, with aments up to 9 cm. long,[1] bracts (scales) oblong and brown and styles only 0.5–1 mm. long. *S. Richardsoni* Hook. of the Mackenzie and Alaskan area has villous-hirsute branchlets, staminate aments 3–4.5 cm. long, glabrous foliage, lance-attenuate and long-persistent stipules up to 2.5 cm. long and glabrous

[1] Dr. Camillo Schneider (Journ. Arn. Arb. i. 222), discussing *S. laurentiana*, suggests correction of the original description of the species, saying: "Fernald . . . says that the fruiting aments measure up to 9 cm. in length, while I have not seen any longer than 7 cm." The original collection of *Fernald & Collins* no. 202 (type number of *S. laurentiana*) consisted of 30 sheets, from which the description was drawn. The sheet retained in the Gray Herbarium did not have aments of the greatest length, but the sheet which went to the late Dr. G. G. Kennedy and which is now preserved at the Gray Herbarium shows an ament 8.5 cm. long; while among the 11 more recently collected numbers of *S. laurentiana* which Dr. Schneider has not examined there are several with aments fully 9 cm. long. The mature aments may reach a thickness of more than 2 cm., with capsules 1 cm. long.

HABENARIA STRAMINEA: FIG. 1, habit, × 1, from Newfoundland; FIG. 2, flowers, × 6.
H. ALBIDA: FIG. 3, flowers, × 6, from Scotland.

HABENARIA HOOKERI, var. ABBREVIATA: habit, × 1, from TYPE collection; FLOWER (upper insert) × 2.

H. HOOKERI: FLOWER (lower insert) × 2.

capsules; *S. Wiegandii* can hardly be confused with it. *S. Barrattiana* Hook. of the Canadian Rocky Mountains is somewhat approached by *S. Wiegandii*, but its leaves have more sericeous-tomentose surfaces without the strong reticulation so conspicuous in *S. Wiegandii*, the stipules are semi-ovate and glabrous, the staminate aments 5 cm. long, and the pistillate up to 1 dm. long. *S. Tweedyi* (Bebb) Ball, originally from Big Horn Mountains, has glabrous and glandular-serrate leaves, glabrous capsules and usually forked stigmas. *S. Hookeriana* Barratt of the Pacific Coast is, like *S. laurentiana* of the eastern coast, a tree or large shrub, with the branchlets densely villous-tomentose, the leaves green and glabrate above and densely white-pubescent but scarcely reticulate beneath, stipules wanting or inconspicuous and styles short, as in *S. laurentiana*. *S. Piperi* Bebb of Washington and Oregon is, likewise, a large shrub, with short styles as in *S. laurentiana* and *S. Hookeriana;* it has glabrous branches, glabrous and serrulate leaves and long aments and is not closely approached by *S. Wiegandii*. *S. amplifolia* Coville of Alaska is also a tree, with densely villous branchlets, villous and glabrate obovate leaves, no conspicuous stipules, very long aments, glabrous capsules and very long styles (3–4 mm.); it is certainly not strongly approached by *S. Wiegandii*. *S. alaxensis* (Anderss.) Coville is also a tree or erect shrub, having the branches glabrous or villous or villous-lanate even when old, the leaves densely white-pannose beneath, the stipules linear to filiform and subentire and the aments very long (up to 1.4 dm.); it is not at all approached by *S. Wiegandii*.

S. Wiegandii seems to be as close to the arctic-alpine *S. lanata* L. of Eurasia as to any American member of the section; but *S. lanata* is a larger and usually less depressed shrub, with villous (instead of tomentose) branchlets, larger and more rounded to obovate leaves, much larger and persistent (as in *S. Richardsoni*) stipules, sessile mostly terminal and subterminal aments, the staminate much larger than in *S. Wiegandii*, bracts or scales with the long villous beard golden-yellow or cinereous, glabrous capsules and longer and often forking stigmas.

Fig. 1. Pistillate flower of Salix ancorifera, × 4.

Salix **ancorifera**, n. sp. (fig. 1), frutex *S. discolorem* simulans; ramulis novellis glabris fuscis nitidulis; foliis immaturis membranaceis anguste obovalibus 1.5–2.7 cm. longis, 0.5–1.5 cm. latis, juvinilibus minute rufescenti-pilosis glabratis costis utrinque

strigoso-pilosis marginibusque remote glanduloso-dentatis piloso-ciliolatis exceptis; amentis femeneis coetaneis breviter pedunculatis in anthesi 3.5–4.5 cm. longis 1.2–1.5 cm. crassis densifloris; pedunculis 5–8 mm. longis foliis 2–4 bracteiformibus munitis, pedunculo rhachique sericeo-pilosis; bracteis oblongis 3.5–4.5 mm. longis fulvis longe cinereo-villosis; ovariis subulato-attenuatis 5–6 mm. longis breviter cinereo-pilosis pilis nitidis; stylo 1 mm. longo, stigmatibus subulatis basi crassis valde recurvatis 1.5–2 mm. longis; pedicellis vix 1 mm. longis glandulam crassam paulo superantibus.—Western Newfoundland: woods, McIver's Cove, Bay of Islands, May 31, 1898, *A. C. Waghorne*, no. 38, distributed as *S. phylicifolia* L. (type in Gray Herb.).

Salix ancorifera for more than thirty years has been a perplexing plant. Originally labeled *S. phylicifolia*, it was later identified by me[1] as the problematic *S. Barclayi* **S. latiuscula* Anderss. Mon. Sal., Kongl. Svenska Vet.-Akad. Handl. vi. no. 1: 165 (1867) or *S. Barclayi*, *β. latiuscula* Anderss. in DC. Prodr. xvi.[2] 255 (1868),[2] while Mr. C. R. Ball has marked the specimen *S. discolor*. As Schneider has pointed out in Journ. Arn. Arb. i. 152 (1920), the Waghorne specimen can hardly be what Andersson described as *S. latiuscula*. The latter, a single specimen in the DeCandolle herbarium, collected in Newfoundland by De la Pylaie, was described with very slender nectary ("nectarium valde tenue"), but the nectary of the Waghorne specimen is very broad and stout. Schneider emphasizes that "As to the stigmas there is no mention in either of Andersson's rather long descriptions" but since Andersson stated in 1868 that *S. Barclayi* is similar, but differs in having the capsules glabrous, it is to be inferred that *S. latiuscula* has the short stigmas of *S. Barclayi*. As a matter of fact Andersson *did* describe the stigmas of *S. latiuscula*, in the fourth line of each of his two descriptions: "stylo brevi stigmatibus bifidis." Since the Waghorne specimen has simple and remarkably elongate and recurved stigmas (fig. 1) and since its nectary as well as the toothing of the leaves and the long pubescence of the midrib so far depart from the characters of *S. latiuscula*, as described by Andersson, it seems advisable to give the shrub of McIver's Cove a definite name.[3] For the sketch (fig. 1) I am indebted to Dr. Lyman B. Smith.

[1] Fernald, Rhodora, xvi. 175 (1914).

[2] Andersson seems to have been quite uncertain about the status of this plant. He originally published it with a binomial, as above, but appended without number to his numbered account of *S. Barclayi;* but the next year he treated it unequivocally as a variety of *S. Barclayi*. *S. latiuscula* was taken up as a definitely published species in *Index Kewensis* and I so considered it in 1914.

[3] It is not yet clear just what De la Pylaie collected as the basis of *S. latiuscula* or *S. Barclayi*, *β latiuscula*. According to Schneider, "Unfortunately the type is wanting in Herb. DeCandolle at Geneva from which Andersson had received it."—Journ. Arn. Arb. iii. 73 (1921). Like *S. ancorifera* and several other endemic willows of Newfoundland it is probably highly localized and perhaps now exterminated.

From *S. discolor* Muhl. which *S. ancorifera* simulates, it is distinguished not only by the very long and characteristically recurved stigmas, but by the glandular toothing of its leaves and by the peculiar long pubescence of the midrib; the erect or merely divergent stigmas of *S. discolor* being only half as long as in *S. ancorifera* and the leaves never displaying the long pubescence on the midribs.

Whether *Salix ancorifera* is still growing at McIver's Cove is doubtful. When Waghorne was there in 1898, there were only a few settlers; now there is a considerable village and much of the better land in the region has been put under cultivation. In early July, 1929, Messrs. Long, Fogg and I went to McIver's Cove for fruiting material. The older inhabitants well remembered Waghorne and his visit there; but no one in the village had ever seen or heard of a *wild* willow. They had plenty of *S. viminalis* planted, but a search of several hours, in which we had the enthusiastic coöperation of the helpful population, indicated that the statement given us upon first landing, that no native willow now grows there, is apparently correct. This excessive localization of relic-endemic willows in Newfoundland is quite in keeping with the extreme localization there and in Gaspé of many other relic-endemics. Thus *Salix leiolepis* Fernald, "a very peculiar species" (Schneider, Bot. Gaz. lxvii. 46), is known only from the type-collection from Table Mountain, Port au Port Bay; *S. chlorolepis* Fernald is known from only a single brook-valley on Mt. Albert in Gaspé; *S. amoena* Fernald, only from a single cove on Ha-Ha Bay, Straits of Belle Isle; *S. pedunculata* Fernald, from but two stations in northwestern Newfoundland; *S. obtusata* Fernald, a "remarkable species . . . of which much more copious material is needed to decide the question of its true relationship" (Schneider, Journ. Arn. Arb. i. 171), only from a single very limited stretch of river-gravel in Gaspé; *S. Wiegandii* (above described), only from the barrens near Old Port au Choix; and *S. latiuscula* Anderss., as yet not rediscovered and with the type-specimen lost, is apparently quite as rare. See p. 48.

(*To be continued*)

THE FLORA AROUND MISSISQUOI BAY, QUEBEC

Clarence Hinckley Knowlton

Numerous contacts with the flora of western Vermont, especially with the limestone areas near Lake Champlain, led me to wonder what plants grew at the northern, Canadian end of the lake. I was

especially interested because of the very choice group of calciphile plants which I have found in Swanton, Vermont, growing above or on the red magnesian limestone which abounds there. I have, therefore, made four separate visits to Missisquoi Bay and the hamlet of Philipsburg, Quebec, and have listed about 280 species; not an exhaustive survey of the region, but perhaps sufficiently extensive to warrant a report at this time.

On the lake shore at Philipsburg is a good exposure of the great fault, geologically speaking, by which large masses of lower Cambrian limestone and marble were pushed over a much younger Ordovician deposit. This Ordovician shale on the lake shore splits easily into shingle, much of the rock being veined with calcite. Inland are great masses of the older rocks, and one of the largest marble quarries in the Dominion of Canada is located here.

All unshaded limestone areas, in settled country, and particularly around old quarries, have a large number of very vigorous weeds, which crowd out many if not all of the native plants. There are at least forty of these weeds in this locality. Those which show marked calciphile affinities include the following:

Alyssum alyssoides
Arenaria serpyllifolia
Erysimum cheiranthoides
Melilotus alba
Vicia Cracca
Euphorbia Helioscopia
Cynoglossum officinale
Echium vulgare
Lappula virginiana
Lithospermum officinale
Nepeta Cataria

Of these, *Lappula virginiana* may be a native in this region. The rarest of the weeds noted is *Alyssum alyssoides*, which flourishes on the dry limestone. Blooming in May, its seeds are ripe in July. The plant is probably a winter annual. I have found this on the New York side of Lake Champlain, at Plattsburg, also in similar situations at Niagara Falls, Ontario. Once also, many years ago, I found it in sandy soil at Monument Beach, Bourne, Massachusetts.

In regard to *Cynoglossum officinale* it is interesting to note that Michaux, on his journey up the west side of Lake Champlain into Canada in 1792, found this plant already well established in the limestone country. The great abundance of *Nepeta Cataria* may be accounted for by the tradition that this herb was long ago introduced in the pastures as a source of nectar for bees.

At the west of International Highway No. 7, as you enter Canada, are flat ledges of limestone, some with light soil, others with

none. Occasional trees on this limestone are *Quercus macrocarpa, Juglans cinerea, Carya cordiformis* and *C. ovata, Ulmus fulva* and *U. americana,* and *Ostrya virginica.* In some places *Celastrus scandens* grows with *Rhus typhina,* forming thickets and fruiting heavily. The low form of *Rhus Toxicodendron* is frequent, and *Ribes Cynosbati* is occasional, but flourishes better in partial shade. The weed tree, *Crataegus punctata,* and numerous herbaceous weeds, also flourish here.

Beyond this dry strip with shallow sun-baked soil is a most wonderful glade-like woodland, which extends to the crest of the shore cliffs. In part of this the orchard-like forest is a solid formation of *Ostrya virginica;* in other places there are denser woods with sugar maples as well as hornbeams; on the lower levels toward the lake, especially on the shale, is a great abundance of *Thuja occidentalis,* without other trees. In the open woods under the hornbeam trees is a marvellous green carpet, in which the dominant species are *Cystopteris bulbifera* and *Mitella diphylla.*

In some such woodland not far away, "ad fines meridionales Canadae" by "Lac Champlain" Michaux found the unusual plant which he named *Mitella prostrata* (see Fernald, Rhodora viii, 90–92, 1906). Thinking it may have been here, one of my visits to this beautiful woodland was made on the King's Birthday, May 24, 1925. There were many thousand plants of *Mitella diphylla* in bloom, but after diligent search I was able to find no variations from the familiar type.

There are such charming spring and summer flowers in this region that I am tempted to comment on each species individually, but they are so numerous that a list must suffice.

Adiantum pedatum
Asplenium platyneuron
Camptosorus rhizophyllus
Agrostis perennans
Melica striata
Festuca nutans
Oryzopsis racemosa
Carex albicans
Carex albursina
Carex Deweyana
Carex eburnea
Carex pedunculata
Carex platyphylla
Carex rosea
Carex sparganioides
Trillium grandiflorum
Laportea canadensis
Parietaria pennsylvanica
Pilea pumila
Asarum canadense
Actaea alba
Actaea rubra
Hepatica acutiloba
Thalictrum dioicum
Dicentra Cucullaria
Dicentra canadensis
Sanguinaria canadensis
Dentaria diphylla
Fragaria vesca var. americana
Rubus odoratus

Rubus occidentalis
Geranium Robertianum
Viola canadensis
Viola conspersa
Viola eriocarpa
Viola rostrata
Viola sororia
Circaea alpina
Circaea latifolia
Osmorrhiza Claytoni
Osmorrhiza longistylis
Hydrophyllum virginianum
Phryma Leptostachya
Galium circaezans
Solidago caesia
Solidago latifolia

Sanguinaria canadensis deserves mention, because here it grows on the limestone, the rhizomes following along crevices in the ledge where there is little food or moisture, until the plant becomes very stunted. In three stations in eastern Massachusetts, at Weymouth, Hingham and Cohasset, the plant also grows in this way on diabase ledges and among diabase boulders, rather consistently avoiding granite. This is an interesting habitat for a plant which habitually reaches its maximum development in the alluvium along our rivers.

The cliffs of Utica or Canajoharie shale reach the lake shore, but do not extend above the village of Philipsburg, where everything near the bay is nearly level. I have explored about half a mile along these cliffs. The shingle is so loose that there is little opportunity for vegetation to catch in. The cliffs are crowned with *Thuja* trees, with a few straggling shrubs of *Cornus circinata*. In some of the crevices are specimens of *Athyrium angustum* var. *laurentianum*. Two grasses are frequent on the headlands, *Trisetum spicatum* and *Sphenopholis pallens*. *Vitis vulpina* is frequent, and in some places gets a foothold in the shingle on the beach. *Potentilla Anserina* has succeeded in rooting in the scanty soil between the loose chips of shale, and sends out its strawberry-like runners in all directions. Another headland plant of special interest is *Thalictrum confine*, well known along the rocky shores of Lake Champlain in Vermont. There are some other shrubs and plants which grow in favored spots on the Vermont shore which I have not yet found on these headlands. Further search may reveal them.

Missisquoi Bay is sheltered by the Swanton peninsula, and gets no large waves from the open lake. There is not very much beach, therefore, but a sandy slope with even grade running down to the water, with some wetter sloughs back from the lake margin. It is like the shores of the St. Lawrence in many ways, with a broad band of vegetation, mostly herbaceous, backed up with a fringe of trees. There are five of these trees which are characteristic—*Populus deltoides*, *Salix nigra*, *Acer rubrum* and *A. saccharinum*, the latter the

more abundant of the two, and *Fraxinus pennsylvanica*, all of which are common along the lake in Vermont. Other willows which I have noted are the shrubs, *Salix cordata*, *S. discolor*, *S. lucida* and *S. rostrata*. *Cephalanthus occidentalis* is abundant, and there are many cornel bushes—*Cornus stolonifera*, *C. alternifolia* and *C. Amomum*. In the swamps near Clarenceville is abundance of *Spiraea alba* DuRoi (*S. salicifolia* of Gray's Manual, 7th ed.), and it is to be expected elsewhere along the bay, as it is abundant in Swanton and Alburg, Vermont.

Potentilla Anserina and *Gratiola aurea* are the two common beach plants, in great variety and profusion. The common grasses of the swales are *Spartina Michauxiana*, *Calamagrostis canadensis*, *Leersia oryzoides* and *L. virginica*. *Zizania aquatica*, var. *angustifolia* is frequent in pools, and in a ditch near Venice, at the head of the bay, I found in 1931 the broad-leaved typical *Z. aquatica* in considerable quantity. Common sedges are *Carex flava*, *C. granularis*, *C. hystericina*, *C. Tuckermani*, *C. vesicaria* and *C. vulpinoidea*.

There were but two real surprises for me in this littoral belt, *Habenaria flava* and *Gerardia paupercula*. The *Habenaria* was not widely distributed, but grew in a large clump, with many specimens. The *Gerardia* grew in a sort of meadow, well back from the bay. It has several Vermont stations scattered along the northern end of Lake Champlain, as far north as Swanton.

Other species which are worth mentioning are:

Equisetum fluviatile
Alisma Plantago-aquatica subsp. brevipes
Elymus virginicus
Cyperus strigosus
Eleocharis palustris var. major
Scirpus americanus
Scirpus atrovirens
Scirpus cyperinus var. pelius
Scirpus pedicellatus
Juncus filiformis
Juncus pelocarpus
Juncus tenuis
Myrica Gale
Alnus incana
Rumex Patientia
Rumex verticillatus
Anemone canadensis
Ranunculus pennsylvanicus
Ranunculus reptans
Penthorum sedoides
Potentilla palustris
Apios tuberosa
Hypericum boreale
Hypericum ellipticum
Hypericum virginicum
Epilobium glandulosum var. adenocaulon
Epilobium molle
Cicuta bulbifera
Cicuta maculata
Sium suave
Steironema ciliatum
Steironema lanceolatum
Menyanthes trifoliata
Apocynum cannabinum
Asclepias incarnata
Cuscuta Gronovii

Scutellaria epilobiifolia	Galium palustre
Scutellaria lateriflora	Campanula uliginosa
Stachys aspera var. tenuifolia	Lobelia cardinalis
Galium Claytoni	Eupatorium maculatum

My 1932 visit took me to a swamp near the marble mill, a swamp which had evidently received the fine-grained tailings from the marble. There were numerous species here which I did not find close to the lake. Here was a wonderful quantity of *Scirpus atrovirens*, specimens in all sizes, but even the most diminutive seemed true to type, and not likely to be confused with var. *georgianus*. Along with the willows common by the lake were *Salix nigra* var. *falcata* and *S. petiolaris*. *Typha angustifolia* and *T. latifolia* were abundant. There was much of *Agrostis stolonifera* var. *compacta*, the common species of the salt marshes. The rushes were *Juncus bufonius, J. Dudleyi, J. nodosus* and *J. balticus* var. *littoralis*. In the drier land there were many coarse weeds, among them *Solidago altissima* and a green-flowered *Asclepias syriaca*.

As a general conclusion I may state that the calciphile flora of the uplands around Philipsburg is practically the same as that of western Vermont. Further, the flora of the lake shore is rather closely related to that along the shores of the St. Lawrence between Montreal and Trois-Rivières, as at Lac St. Pierre.

About three miles east of Philipsburg, in St. Armand township, are wonderful big limestone cliffs and rich woods that may yield further discoveries of interest to the botanist.

Hingham, Massachusetts.

NOTES FROM SOUTHEASTERN WISCONSIN—II[1]

S. C. Wadmond

Polystichum acrostichoides (Michx.) Schott. Apparently the only Wisconsin station of record is one north of Racine, Racine County (Wadmond, Trans. Wis. Acad., 16 2: 803, 1909), where a few individuals were taken on a rocky hillside. A single plant, only, was located in Richmond Township, Walworth County in the summer of 1931. It was taken in deep woodland, and quite likely a native station. This gives us but two stations in the State for the Christmas Fern!

Echinochloa Walteri (Pursh) Nash. To the Wisconsin stations

[1] Published with aid of a grant to Rhodora from the National Academy of Sciences.

listed by Fassett (Rhodora **32**: March 1930) may be added shores of Delavan Lake, Walworth County, where it is not uncommon.

Rynchospora capillacea Torr. Gray's Man. 7th ed. ranges it "e. Que. to w. Ont., s. very locally to N. J., Pa., O., Mich., and Mo." Represented in U. W. Herbarium by two collections, one from Waukesha County in 1859, *I. A. Lapham*, and the other from Bailey's Harbor, Door County, in 1929, *Dr. J. J. Davis*. The latter collection contains some var. leviseta. Taken by the writer in marly pools at Big Bend, Waukesha County, summer of 1932.

Carex Richardsonii R. Br. To the list of middle-western stations recorded for this "evasive" sedge by Prof. Fernald (Rhodora Nov. 1932), Dr. Fassett of the U. W. writes may be added that of Indiana Harbor, Inc., in sandy soil, May 28, 1904, *Robert Bebb* no. 1992.

Represented in U. W. Herbarium by collections from Brown County (Green Bay May 25, 1879, *J. H. Schuette*), and Dodge County (Horicon May 19, 1859, *I. A. Lapham*). Taken by the writer in Township of Mount Pleasant, Racine County (l. c. p. 816). The station was a low mucky prairie (locally known as Barnes Prairie), which at the time had never been ploughed, but which has long since been drained and devoted to celery, cabbages and truck gardening. It was not a dry situation by any means, thus differing from the habitat commonly ascribed to it.

Juncus Greenei Oakes & Tuckerm. Cheney (Pharmaceutical Archives, Apl. 1899) has reported this rush from the Dells of the Wisconsin River, Adams County, the only station known for the State. Represented at the U. W. Herbarium from additional stations in La Crosse, Jackson, Iowa, Marquette and Green Lake Counties. The Museum Herbarium shows collections from the counties of Dunn, Manitowoc, Eau Claire, Waushara and Shawano. To these may now be added Walworth County, where it was found in the Township of East Troy in small numbers on a little sandy ridge separating the two arms of a *Larix* swamp.

Juncus balticus Willd., var. littoralis Engelm. Fassett (Rhodora 29: Nov. 1927) reported this rush frequent along the shores of Lakes Michigan and Superior but known inland in Wis. only from Dane and Racine Counties. It had, however, been collected by Milwaukee Museum expeditions as far back as 1915 from inland stations in the northwesterly counties of Douglas, Washburn and Price, and in 1913 and 1915 in the counties of Wood, Portage and Waupaca, in almost the exact center of the State. In 1928 it was reported in extreme northwestern Wis. from the margins of a number of lakes which in early post-glacial times were undoubtedly connected. (Aldrich & Fassett Science **70**: July 12, 1929, pp. 45–46.)

Collected by the writer in moist sand on margin of pond in a depression bordering the Kettle Moraine, Township of La Grange, Walworth County, and in gravel pits along railroad at Beloit, Rock

County; the former is undoubtedly a native station, the latter probably an introduction.

Juncus balticus var. littoralis f. dissitiflorus Engelm. In addition to the Wisconsin stations listed by Fassett (l. c.), may be recorded collections in the Milwaukee Museum from Apostle Islands, Ashland County, and in the writer's herbarium from the beach of Lake Michigan at Racine, Racine County.

Juncus alpinus Vill. vars. insignis Fries and fuscescens Fernald. Reported in Swezey's State List (1883) from Manitowoc County only, on authority of Th. A. Bruhin.

Dr. Fassett reports both of these varieties common along the shores of Lakes Michigan and Superior. Known inland from the northwesterly county of Burnett, the site of the early post-glacial Barrens Lake, and from Adams and Waushara Counties, within the boundaries of another early post-glacial lake, Lake Oshkosh. The writer finds it in Walworth County along an old railroad cut on a springy clay slope containing a generous admixture of gravel.

Phytolacca americana L. Cheney (Pharmaceutical Archives Apl. 1899) recorded this species as of rare occurrence in the State, it appearing in the U. W. Herbarium from Jefferson County only. Material has since accumulated there from one station each in Rock, Dane and Grant Counties. The writer located it in the summer of 1931 at several points in the extreme southeast corner of Rock County. It apparently has come up from the south along the larger waterways.

Cycloloma atriplicifolium (Spreng.) Coult. Cheney (l. c.) reported a single individual at Madison, Dane county, collected by *Dr. True*. He added that he had observed it in great abundance along the Wisconsin (doubtless Mississippi is intended) river bank a few miles above La Crosse, La Crosse County. Reported by the writer (l. c. p. 832) from the Lake Michigan beach in Racine and Kenosha Counties, where observation this last summer showed it very widely established. This emigrant from the western plains appears now to have advanced up the Wisconsin, Black and Chippewa Rivers as well as the Mississippi, besides being recorded from a half dozen counties in the northern one-third of the State, and from the east-central county of Brown.

Silene dichotoma Ehrh. The earliest record for the State is a sheet at the Milwaukee Public Museum taken in Town of Greenfield, Milwaukee County, in 1915. Other sheets in the Museum Herbarium are from Douglas and Washburn Counties, in the extreme northwesterly corner of the State. The only record at the U. W. Herbarium is a collection by Fassett in the jack-pine barrens of Douglas County. Taken in the summer of 1932 by the writer along right-of-way of the C. M. St. P. & Pac. R. R. at the station of Walworth, Walworth County, pretty well into the southeasterly corner of the State. Gray's Man., 7th ed. reports it as ranging "N. E. to Tex., and on the Pacific Slope."

Polygala Senega L., var. latifolia T. & G. Apparently confined to the extreme southeasterly portion of the State. There is a collection from Kenosha County by the writer (l. c., p. 848), and in the Museum Herbarium a fine specimen taken at Wauwatosa, Milwaukee County, with leaves up to 4 cm. wide and 8 cm. long.

Hypericum cistifolium Lam. This species does not appear in the latest revision of Wisconsin Hypericaceae (McLaughlin, Trans. Wis. Acad., 26: 281–288, 1931). Taken by the writer at several stations near by and on the banks of the Sugar River, 2 mi. w. of Brodhead, Green County, apparently the first record for the State.

Gentiana Saponaria L. Appears to be limited in U. W. collections to the northwesterly Counties of Pierce, Burnett, Sawyer, Price and Ashland, plus a single collection in Dane County. To this list may now be added Racine County, along right-of-way of C. M. St. P. & Pac. R. R., between stations of Union Grove and Sylvania.

Penstemon grandiflorus Nutt. Represented in U. W. Herbarium from Polk, St. Croix and Pierce Counties (where probably native), and Juneau County along the railroad (probably an introduction). The Museum has sheets from Pierce (probably native), Monroe and Sauk Counties (probably introduced).

Taken by the writer in sand pits along railroad at Beloit, Rock County, a probable introduction.

Plantago Purshii R. & S. Recorded from most of the counties in the western third of the State, and from the southeasterly counties of Rock, Waukesha and Milwaukee. Taken this summer in sandy meadows in the extreme southeasterly corner of Jefferson County, just across the Walworth County line.

Plantago aristata Michx. Cheney (l. c.) reported a single plant collected at a suburb of Madison, Dane County and Beaver Dam, Dodge County, probably introduced in both instances with grass seed. It has since been recorded at U. W. Herbarium from Waushara, Iowa and Green Counties, and at the Milwaukee Museum from Grant, Waushara, Wood and Marathon Counties. The writer found it in great abundance during the summer of 1931 in grain fields and pasture land all along the Little Sugar River north of Albany, Green County.

Polymnia canadensis L. Cheney (l. c.) reported collecting this in La Fayette and Dane Counties only. This rather local plant is now represented in the Herbaria of the Univ. of Wisconsin, Milwaukee Public Museum, and the writer, by collections from the majority of counties in the southern two-thirds of the State, plus a record from the northwesterly county of Burnett.

Artemisia frigida Willd. The earliest record from the State appears to be a collection in 1886 from Jefferson County, Milwaukee Public Museum. Also represented there from Washburn and Columbia Counties, in all cases found on railroad ballast.

This western wormwood sage was collected by Fassett in 1927 in

large tufts on bare dry rock on summit of bluff at Bay City, Pierce County, believed by him to be native and probably the only native station in the State. Collected by Dr. J. J. Davis at Maiden Rock, Pierce County, and by the writer at Beloit, Rock County, in both cases along the railroad and doubtless introduced through that medium. Mr. Weatherby writes that the Gray Herbarium has specimens from Dearborn, Mich., also collected along railroad.

The writer is greatly indebted to Dr. N. C. Fassett of the University of Wisconsin for information as to Wisconsin localities, to Mr. A. M. Fuller, Associate Curator of Botany, for the loan of material from the Milwaukee Public Museum, and to Mr. C. A. Weatherby of the Gray Herbarium for verifications. Material of all of the above numbers has been deposited either at the Gray Herbarium or that of the Univ. of Wisconsin.

Delavan, Wisconsin.

Myriotrichia densa in New England.—As is frequently stated in the books and is well known among practical algologists, six species of *Myriotrichia* are listed from the coasts of North America and Europe. But despite the repeated attempts of authorities to delimit these species, no one seems as yet to have met with success in his efforts. In the *Phycologia Britannica* (1851) Harvey figured and described two species—*M. clavæformis* and *M. filiformis*. In the *Nereis Boreali-Americana* he listed but the last-named species, and this only from Penobscot Bay. When Farlow published his *Marine Algæ of New England*, in 1881, he described the two species of Harvey, but properly reduced *M. filiformis* to a variety. He quoted Naegeli's work on the development of the thallus, as his authority for this act; for Naegeli had shown plainly that *M. filiformis* was only the young stage of *M. clavæformis*. In 1881 three species were listed in the genus. By the work of Hauck and others this number has been increased to six, the latest addition being *M. densa* Batters in 1895. The renowned Dr. Kuckuck, in his revision of the genus in 1899, attempted to retain all these species and to differentiate between them. To this writer it would seem with but indifferent success; for, in this country, we seem to have but one polymorphic species which assumes very different aspects as its development proceeds. But if we are to recognize *M. densa* as a valid species, I beg leave to record that we find what seems this form growing

occasionally in Blue Hill Bay of this state. The English specimens occur on *Zostera*, but here we have noted it only on *Asperococcus* and *Scytosiphon*.—R. E. Schuh, Brooklin, Maine.

AN UNDESCRIBED MUTISIA FROM ECUADOR

Stuart K. Harris

Mutisia **Rimbachii** Sod. in herb., n. sp. Frutex scandens, caule lignescenti, angulato; ramis ochroleuco-tomentosis; folia alterna brevissime petiolata vel subsessilia, pinnata, apice in cirrhum utrinque tripartitum protensa, cirrho excepto 1 dm. longa; segmenta distantia utrinque 6–10, brevissime petiolulata, lanceolata vel elliptica, obtusa vel late acuta, submucronata, basi repanda subcordata, margine revoluta, supra glabra vel paulo tomentosa, subtus ochroleuco-lanata, coriacea, inferiora 2.5–4 cm. longa, 1–1.5 cm. lata, superiora minora; capitulum in pedunculo 3–4 cm. longo, campanulatum, circa 8 cm. longum, 3–4 cm. latum, multiflorum, heterogamum; tegulae circa 3-seriatae, imbricatae, integerrimae, dense viridi-tomentosae, interiores ovato-oblongae vel lineari-oblongae, 4 cm. longae, exteriores minores, ovatae; flores marginales circa 12, flores disci breviores; achenia ignota.

Climbing shrub, stem woody, angular; the branches covered with an ochroleucous tomentum: leaves alternate, shortly petiolate or subsessile, pinnate, the tip extended as a three-parted tendril, 1 dm. long except for the tendril; leaflets in 6–10 pairs, shortly petiolulate, lanceolate or elliptic, obtuse or broadly acute, submucronate, the bases slightly subcordate. the margins inrolled, glabrous or sparingly tomentose above, ochroleuco-lanate beneath, coriaceous, the lower 2.5–4 cm. long, 1–1.5 cm. wide, the upper smaller: heads on peduncles 3–4 cm. long, campanulate, about 8 cm. long, 3–4 cm. wide, many flowered, heterogamous; tegules in about 3 series, imbricate, entire, densely green-tomentose, the inner ovate-oblong or linear-oblong, 4 cm. long, the outer smaller, ovate; marginal ray flowers about 12, flowers of the disk smaller; achenes unknown.

Spruce, no. 5456, in Andibus Ecuadorensibus, 1857–9; *Rimbach* no. 198, Ecuador, Carihuairazo 3500 m., June, as *Mutisia Rimbachii* Sod. (type, from photograph of sheet in Berlin Herbarium).

The vegetative parts of this species seem almost identical with those of *Mutisia pinchinchense* Krst. The involucre of *M. Rimbachii* is campanulate in herbarium material, however, while that of *M. pinchinchense* is cylindric. The bracts of the involucre of *M. Rimbachii* are covered with a long, very dense, green tomentum while those of *M. pinchinchense* have an ochroleucous tomentum mostly

confined to the margins. Spruce gave to this species a manuscript name which he seems never to have published and which has since been used for a simple-leaved species by Philippi in Anal. Univ. Chile, lxxxv. 820 (1894). The description of *M. Rimbachii* also seems never to have been published by Sodiro, and I propose, therefore, to validate that name for this very distinctive species.

The Rimbach specimen was collected sometime prior to 1921 on Mt. Carihuairazo in Tungurahua Province, Ecuador. The Spruce specimen is labelled only *In Andibus Ecuadorensibus, 1857–9.* A perusal of Spruce's *Journal* shows that during the years 1857–9 Spruce made his headquarters at Ambato, in Tungurahua Province and that between the 23rd and 31st of June, 1859, he made a collecting trip to Mt. Carihuairazo. Is it not possible, therefore, that this Mutisia was found by Spruce in the locality where it was later found by Rimbach and that this is another of those endemic species so characteristic of the Andes of Ecuador?

Gray Herbarium, Cambridge.

THE SLENDER-SPIKED SPARTINA PECTINATA[1]

M. L. Fernald

In his *North American Species of Spartina,*[2] Merrill more satisfactorily differentiated than had his predecessors the essentially southern coarse halophyte, *Spartina polystachya* (Michx.) Willd., and the more slender, northern transcontinental plant, with long-awned glumes, which, following erroneous usage, he called *S. cynosuroides* (L.) Willd., the latter based on *Dactylis cynosuroides* L. (1753). At that time Merrill cited for the transcontinental plant the synonym *S. pectinata* "Bosc." (1820).

Subsequently, Piper,[3] pointing out that the type of *Dactylis cynosuroides* L. is the coarse southern species long known as *Spartina polystachya*, correctly took up *S. pectinata* Link (1820) for the more slender transcontinental plant. But Hitchcock, reasoning that "*S. pectinata* was collected by Bosc probably in South Carolina, where *S. michauxiana* does not grow," renamed the slender transcontinental species *S. Michauxiana* Hitchc. Contr. U. S. Nat. Herb. xii. 153 (1908).

[1] Published with aid of a grant to Rhodora from the National Academy of Sciences.

[2] Merrill, U. S. Dept. Agric. Bur. Pl. Ind. Bull. no. 9 (1902).

[3] Piper, Contrib. U. S. Nat. Herb. xi. 145 (1906).

Piper's correct identification of *Spartina pectinata* was followed by Rydberg,[1] although he ascribed the species to Bosc, who sent the specimen to Berlin, rather than to Link, who described it. And very recently Hitchcock has accepted the reduction of *S. Michauxiana*, but, likewise, ascribed *S. pectinata* to Bosc instead of Link. "*S. pectinata* Bosc (*S. michauxiana*)."[2] The reduction of *S. Michauxiana* to *S. pectinata* seems wholly justified. In the Gray Herbarium there is a spike of Bosc's plant (TYPE of *S. pectinata* Link), given many years ago to Asa Gray. This is wholly characteristic in all points of the broader- and shorter-spiked plant so common across North America from Newfoundland to Washington, and south to Maryland, West Virginia and Texas.

Since the plant reaches Maryland and West Virginia, it is not impossible that its eastern range may extend farther south and that Bosc actually collected the specimen; it is equally possible that the specimen which he sent to Willdenow was derived from a northern source. Link's description, which is apparently not generally available, is here quoted. It is one of very many new descriptions in a paper by Link upon new plants in the Botanic Garden at Berlin and in the Willdenow Herbarium.

Spartina pectinata von Bosc. aus Nord-amerika im Herbar. Foliis convolutis, spiculis alternis solitariis secundis, rachi scabra, valvulis dorso scaberrimis. Hat viel kürzere Ähren als Sp. polystachya, auch kürzer gestielte. Die Ähren stehen immer einzeln, kommen nie doppelt.

The species, although ascribed by Merrill, Rydberg and Hitchcock to Bosc, was, apparently, not described by Bosc. The specimen in the Willdenow Herbarium was received from him, just as specimens of other species described by Link in the same paper were received from von Humboldt, Klein, Bory de St. Vincent, Petit Thouars, Desfontaines and others. The error of ascribing *Spartina pectinata* to Bosc started, apparently, in *Index Kewensis*. There Link's extensive paper in Sprengel, Schrader & Link's Jahrbücher der Gewächskunde, 1^3. 13–93 (1820) seems to have been indexed with singular lack of consistency. In this paper Link varied the formula slightly when stating the source of the specimen in the Willdenow Herbarium; but the VON consistently used by him was obviously intended for FROM, COLLECTED BY, or SENT BY, not for OF. A few illustrations should make this clear. I am, therefore, quoting Link's phrase and then giving the interpretation of the authorship of the species by *Index Kewensis*.

[1] Rydb. Fl. Rocky Mts. and adj. Plains, 64 (1917 or 1918).
[2] Hitchc. Bartonia, no. 14: 29 (1932).

Link's Statement	Authorship acc. to Index Kewensis
Cyperus inaequalis von Humboldt aus Süd-Amerika.	*C. inaequalis* Link.
Cyperus festivus aus Indien von Klein gesandt.	*C. festivus* Link.
Mariscus mexicanus von Humboldt im Herbar.	*M. mexicanus* Willd. ex Link.
Kyllingia polyphylla von Petit Thouars aus Isle de France und *K. granularis* von Desfontaines aus Cayenne sind noch nicht beschrieben.	*K. polyphylla* Thou. ex Link, and *K. granularis* Desf. ex Link.
Hypaelytrum umbellatum aus Cayenne von Desfontaines im Herbarium.	*H. umbellatum* Willd. ex Link.
Hypaelytrum iridifolium. Eine sehr ausgezeichnete Pflanze, von Humboldt an den Ufern des Orinoko gesammelt, im Herbar.	*H. iridifolium* Link.
Spartina pectinata von Bosc. aus Nord-amerika im Herbar.	*Spartina pectinata* Bosc, ex Link.

From the above very brief tabulation it is clear that the entries in the *Index Kewensis* of species described by Link in the paper above cited need scrupulous checking and consistent treatment. It is also reasonably clear that the description of *Spartina pectinata* originated with Link, not with Bosc.

Spartina pectinata occurs in two strikingly different extremes. The widest-ranging and generally more common plant has the comparatively short and broad spikes (2–11 cm. long, 5–8 mm. wide, including the salient awns) sessile, subsessile, or the lowest short-peduncled. The extreme plant, described as *S. Michauxiana*, var. *Suttiei* Farwell, Rep. Mich. Acad. Sci. xxi. 352 (1920), from Michigan, has a broad range, from Prince Edward Island to Minnesota, south to Nova Scotia, southern New England, New Jersey, Pennsylvania, Kentucky, Missouri and Oklahoma. It is distinguished by its slender spikes (mostly 0.7–1.5 dm. long, 3–5 mm. wide), with appressed awns. The spikes are more inclined to be peduncled and more divergently ascending, in extreme specimens even almost nodding. As a variety it is strongly marked; under *S. pectinata* it becomes

Spartina pectinata Link, var. **Suttiei** (Farw.), comb. nov. *S. Michauxiana*, var. *Suttiei* Farw. Rep. Mich. Acad. Sci. xxi. 352 (1920). Cotype in Gray Herb.

A Suppressed Plate in Eaton's Ferns of North America.—In the library of botanical books collected by the late Walter Deane and bequeathed by him to the Gray Herbarium was found, in the original paper covers, a copy of Part I of D. C. Eaton's *Ferns of North*

America. This consists of three plates with twenty pages of descriptions. Plates I and III are the same as in the two copies of the complete work in the Gray Herbarium library and in that among the Deane books, but plate II is quite different. The usual one is made up of two figures, *Cheilanthes Cooperae* and *C. vestita*, both represented by whole plants, while the other, without names on the plate, contains three drawings of ferns, the first two of detached fronds only, numbered one, two and three, which, according to the text, are respectively *C. Cooperae*, *C. lanuginosa*, and *C. californica*.

Apparently this particular Part I was sent out as a prospectus and in the final publication a new plate II was substituted. The original plate II was eventually redrawn, with the omission of *C. Cooperae*, and issued as plate VI.—Ruth D. Sanderson, Gray Herbarium.

Notes on the Flora of Haverhill, Massachusetts.—Two years of collecting in Haverhill, Essex County, Massachusetts, has disclosed several interesting introductions and extensions of ranges. During the spring of 1932 I made several trips to Gray and Cole's Nursery and collected introduced plants growing as weeds among the beds. The entire nursery was covered by a rather peculiar looking Poa which Prof. Fernald identified as *Poa Chapmaniana* Scrib. This plant is a native of the South, growing as far north as Delaware. The only previously known records to the north of Virginia are one from Arlington, District of Columbia[1] and one from Townsend, Delaware.[2] A single plant of another uncommon grass was also collected. This was *Apera spica-venti* (L.) Beauv., which is known in Massachusetts only from collections made in South Boston in 1878 and 1879. The beds were also full of *Draba verna* L. and a strange member of the *Caryophyllaceae* in which the flowers were borne in umbels. This was found to be *Holosteum umbellatum* L., new to Massachusetts. This plant was found growing in company with *Draba verna* in the Hiti Nursery at Pomfret, Connecticut by Mr. F. W. Hunnewell in 1924,[3] the first record in New England. It was later found by Mr. C. A. Weatherby and Mr. W. A. Anderson along the Cliff Walk at Newport, Rhode Island. Mr. Cole told me that they have received plants from the Hiti Nursery and the Holosteum was probably introduced in this manner.

[1] Hitchcock, A. S. and Standley, P. C., Cont. U. S. Nat. Herb. xxi. 88 (1919).
[2] Long, Bayard, Bartonia, no. 10: 35 (1927–1928).
[3] Hunnewell, F. W., Rhodora, xxvi. 199 (1924).

In September a visit to the town dump on Primrose Street was rewarded by the discovery of two more interesting introductions. The first of these was *Axyris amarantoides* L., hitherto known in New England by a single collection made in North Bridgton, Maine in 1921 by Mrs. E. M. Mead.[1] This plant is a native of Siberia which has become naturalized in the Middle West and appears to be spreading eastward. The other was *Plantago arenaria* W. & K., a pretty European weed which is establishing itself in North America.

At the mouth of Cottle's Creek I found *Scirpus pedicellatus* Fernald, which was previously known in Massachusetts only from Berkshire County. Another interesting extension of range was that of *Bidens cernua* L., var. *minima* (Huds.) DC., which had been taken in the state only at Amherst and in Berkshire County. This plant was found along the shores of both Kenoza Lake and Crystal Lake. It seems probable that this will be found to be growing in all parts of the state as more extensive botanizing is done. Specimens of all the plants mentioned have been deposited in the herbarium of the New England Botanical Club.—Stuart K. Harris, Gray Herbarium, Cambridge.

Rorippa amphibia in Androscoggin County, Maine.—A recent note[2] on the occurrence of this plant in Connecticut and near Montreal in Canada, calls to mind that the writer made collection of the same species in Maine, on June 18 and August 12, 1928. Specimens from the August collection have been identified by Mr. C. A. Weatherby.

The station is at the southeastern extremity of Lake Auburn, Auburn, Androscoggin County, Maine. This section of the lake is between the Auburn-Turner roads (Highway No. 4) and the trolley road (now discontinued) which connected the townships named. Large amounts of filling have been used in building the causeways for the roads referred to, though no dumping ground exists there.

On the visit in June, the plants, which were numerous, were in full flower. The visit in August showed all of the capsules withered. Upon a careful search we were unable to find any capsules which had discharged seed. The submerged stems and branches were producing many young plants by budding.—Arthur H. Norton, Museum of Natural History, Portland, Maine.

Volume 35, no. 414, including pages 187–226 and 3 plates, was issued 9 June, 1933.

[1] Fernald, M. L., Rhodora, xxix. 224 (1927).
[2] 1931, Bradley, Rhodora 33: 192.

MALAXIS BRACHYPODA: fig. 1, habit, × 1, from Newfoundland; FIG. 2, flowers, showing drooping lip, × 4, from Herkimer Co., New York; FIG. 3, fruit, showing reflexed perianth, × 4, from Maine; FIG. 4, expanding buds, × 4, from Quebec.

M. MONOPHYLLOS: FIG. 5, flowers, showing erect lip, × 4, from Switzerland; FIG. 6, fruit, showing projecting shriveled perianth, × 4, from Russia; FIG. 7, buds, × 4, from Bavaria.

SALIX WIEGANDII, × 1: FIG. 1, mature branchlet; FIGS. 2 and 3, flowering (pistillate) branchlets.

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